Note:
The following curriculum is a consolidated version. It is legally non-binding and for informational purposes only.
The legally binding versions are found in the University of Innsbruck Bulletins (in German).

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Curriculum for the

Bachelor's Programme Atmospheric Sciences

at the Faculty of Geo- and Atmospheric Sciences, University of Innsbruck

§ 1 Qualification profile

(1) Subject-specific competences: Graduates understand the processes in the atmosphere and their connection to other earth system components. They have in-depth knowledge and practical skills with which they can understand, analyse and predict complex interacting processes in the atmosphere system of the earth. They have a critical understanding of the theoretical fundamentals of flows in the atmosphere and air chemistry, the numerical prediction of weather and climate and climate change and can evaluate and analyse data from the measuring platforms to record the state of the Earth's atmospheric system on many spatial-temporal scales. Due to the institute's research focus in the field of atmosphere on mountains, the graduates understand the processes that come about through the interaction of the atmosphere with the mountains and can also analyse and predict them. Thanks to first-hand experiences and handling of these special processes at the location in the middle of the Alps, a more advanced level of understanding and skills can be imparted than could be in a lowland location. These special skills can be applied globally – about a quarter of the total land mass is mountainous. The advanced skills in meteorology, atmospheric chemistry, atmospheric physics, climate and climate change enable graduates to solve complex problems. They are innovative and have the skill required for solving novel problems. Graduates can manage complex projects in their field of expertise and take on decision-making responsibility.

(2) Generic competences: Graduates master the mathematical and physical principles and tools with which the processes within the atmosphere can be described, analysed and predicted. They are sufficiently familiar with the mathematical language and way of thinking to independently familiarise themselves with new mathematical methods and tools and thus are able to deal with the rapid growth in knowledge, data and methods in the future. Thanks to their frequently applied and trained analytical way of thinking, they can solve unknown problems and identify the essential building blocks necessary for the solution. Graduates are proficient in programming languages and, with skills in statistics, machine learning and data science, can not only analyse and evaluate the huge amount of data from the measurement and prediction of the earth-atmospheric system, but also data from other specialist areas. They have the skills to read scientific literature critically and analytically, to formulate and test scientific hypotheses and to write down and present scientific and technical results. They can work in teams. Their profound understanding of the processes in the atmospheric system of the earth that lead to climate change and the methods and results of climate projections enable them to make a direct and critical contribution to measures required to reduce the consequences of climate change - one of the most important sustainability goals in the first half of the 21st century. In Individual Choice of Specialisation, the graduates acquire skills for working in an interdisciplinary way.

(3) Professional access: Graduates are qualified for tasks in private and public weather forecasting and in economic areas that are affected by weather and climate, such as environment, energy, transport, finance and insurance and tourism. This also includes engineering and planning offices specialising in renewable energies and energy-efficient buildings. They have the necessary skills to contribute to the general good in public institutions at federal and state level in the environmental sector - air quality, hydrography, urban climate, avalanche warning services, etc. The skills in software and data science in combination with analytical thinking enable them to work in professional fields in which large amounts of data have to be analysed and processed.

(4) Consecutive character: The Bachelor's Programme in Atmospheric Sciences prepares students for a relevant master's programme in the field of the atmospheric system of the earth, such as atmospheric sciences, climate sciences, environmental meteorology, glaciology, atmospheric chemistry, hydrology, earth exploration.

§ 2 Programme scope and duration

The Bachelor's Programme covers 180 ECTS-Credits. This corresponds to a study duration of six semesters.

§ 3 Types of courses and maximum number of students per course

(1) Courses with continuous performance assessment:

Lectures (VO) are courses held in lecture format. They introduce the research areas, methods and schools of thought for a given subject. Maximum number of participants: no maximum number of participants

(2) Courses with continuous performance assessment:

1. Introductory seminars (PS) introduce students interactively to scientific literature through the treatment of selected issues. They convey knowledge and methods of academic work. Maximum number of participants: 25
2. Lectures with integrated practical parts (VU) focus on the practical treatment of concrete scientific tasks that are discussed during the lecture parts of the course. Maximum number of participants: 25
3. Practical training courses (PR) provide practical experience with concrete scientific tasks, complementing occupational and academic training. Maximum number of participants: 12

§ 4 Allocation of places in courses with a limited number of participants

In courses with a limited number of participants, course places are allocated as follows:

1. Students for whom the study duration would be extended due to the postponement are to be given priority.
2. If the criteria in no. 1 do not suffice, first, students for whom this course is part of a compulsory module are to be given priority, and second, students for whom this course is part of an elective module.
3. If the criteria in no. 1 and 2 do not suffice, the available places are drawn by random.

§ 5 Studies induction and orientation stage

(1) Within the scope of the studies induction and orientation stage, which takes place in the first semester, the following course examinations must be passed:

a. VO Introduction to Atmospheric Sciences (Compulsory Module 1a, 2 hrs., 2.5 ECTS-Credits),
b. VO Mechanics and Thermodynamics (Compulsory Module 4a, 4 hrs, 6 ECTS-Credits).

(2) Successful passing of all examinations of the studies induction and orientation stage entitles to passing all further courses and exams as well as to writing the Bachelor's Thesis.

(3) Before the completion of the studies induction and orientation stage, courses with a total of 21.5

(4) ECTS-Credits can be passed. The registration requirements listed in the curriculum must be met.

§ 6 Compulsory and elective modules

(1) Compulsory modules (incl. Bachelor's Thesis) covering altogether 170 ECTS-Credits) must be passed:

1.	Compulsory Module: Introduction to Atmospheric Sciences and Mathematics	h	ECTS-Credits
a.	**VO Introduction to Atmospheric Sciences** Overview of the composition, processes and phenomena in the atmosphere, weather, climate and climate change	2	2.5
b.	**VO Preparatory Course in Mathematics** Introduction to the basics of elementary mathematics; vector calculation; differential calculus; scalar and vector fields; basic elements of vector analysis; simple differential equations; complex numbers; Taylor expansion	1	1
c.	**PS Preparatory Course in Mathematics** Discussion, advanced study and practising of the contents of the lecture	1	1
	Total	**4**	**5**
	Learning Outcomes: The students have an overview of the processes in the atmosphere that determine weather, climate and climate changes. They can describe and explain the basics of elementary mathematics and thus solve elementary mathematical problems in physics and atmospheric sciences.		
	Prerequisites: none		

2.	Compulsory Module: Linear Algebra	h	ECTS-Credits
a.	**VO Linear Algebra** Matrix calculation; systems of linear equations; vector spaces, vector spaces with dot product (introduction to Euclidean geometry); arithmetic with functions; eigenvalue problems	3	4.5
b.	**PS Linear Algebra** Discussion, advanced study and practising of the contents of the lecture: practising scientific reasoning and the presentation of mathematical contents	2	2.5
c.	**PR Linear Algebra** Practical exercises relating to the contents of the lecture	1	0.5
	Total	**6**	**7.5**
	Learning Outcomes: The students master the basic concepts of linear algebra and can use them to solve problems in this area. They are able to work independently on similar content and can select suitable methods of linear algebra to use them for solving problems in physics and atmospheric sciences.		
	Prerequisites: none		

3.	Compulsory Module: Analysis 1	h	ECTS-Credits
a.	**VO Analysis 1** Introduction to analysis; the necessary basic mathematical terms; real numbers; functions; differential and integral calculus in one variable	3	4.5

b.	**PS Analysis 1** Discussion, advanced study and practising of the contents of the lecture: practising scientific reasoning and the presentation of mathematical contents	2	2.5
c.	**PR Analysis 1** Practical exercises relating to the contents of the lecture	1	0.5
	Total	**6**	**7.5**
	Learning Outcomes: The students master the basic concepts of analysis and can use them to solve problems in this area. They are able to work on similar content independently and can select suitable methods of differential and integral calculus in a variable to use them for solving problems in physics and atmospheric sciences.		
	Prerequisites: none		

4.	**Compulsory Module: Mechanics and Thermodynamics**	**h**	**ECTS-Credits**
a.	**VO Mechanics and Thermodynamics** Measurement and units of measurement; mechanics of the mass point and of rigid bodies; deformable bodies and fluids; oscillation and waves; thermodynamics; basic elements of statistical mechanic	4	6
b.	**PS Mechanics and Thermodynamics** Discussion, advanced study and practising of the contents of the lecture: practising scientific reasoning and the presentation of physical contents; independent study of selected examples from the field	2	4
	Total	**6**	**10**
	Learning Outcomes: The students are able to describe the basics of classical physics (mechanics and thermodynamics) and can explain the associated concepts. They are able to transfer their knowledge and solve problems in mechanics and thermodynamics.		
	Prerequisites: none		

5.	**Compulsory Module: Analysis 2**	**h**	**ECTS-Credits**
a.	**VO Analysis 2** Differential and integral calculus in several variables, including topological principles in Rn, curves and surfaces in R3 as well as integral theorems.	4	6
b.	**PS Analysis 2** Discussion, advanced study and practising of the contents of the lecture: practising scientific reasoning and the presentation of physical contents;	2	4
	Total	**6**	**10**
	Learning Outcomes: The students master the basic terms of differential and integral calculus and integral theorems and can use these, including basic topological terms, to solve problems in analysis. They are able to work on similar content independently and can select suitable methods of analysis in several variables to use them for solving problems in physics and atmospheric sciences.		
	Prerequisites: none		

6.	Compulsory Module: Mathematical Methods in Physics 1	h	ECTS-Credits
a.	**VO Mathematical Methods in Physics 1** Probability calculus, ordinary differential equations, Fourier series and Fourier integrals and vector analysis in linear spaces	3	4.5
b.	**PS Mathematical Methods in Physics 1** Discussion, advanced study and practising of the contents of the lecture: practising scientific reasoning and the presentation of mathematical contents	2	3
	Total	**5**	**7.5**
	Learning Outcomes: The students are able to describe and apply simple mathematical methods of physics. In particular, they are able to use methods of probability theory, ordinary differential equations, Fourier series and to apply integral and vector analysis in linear spaces to problems in physics and atmospheric sciences and to work on similar content independently.		
	Prerequisites: none		

7.	Compulsory Module: Atmospheric Thermodynamics and Radiation	h	ECTS-Credits
a.	**VU Atmospheric Thermodynamics and Cloud Processes** Thermodynamic conservation quantities and variables and laws in the atmosphere; thermodynamics of the humid atmosphere; thermodynamic diagrams; vertical instability; processes for the formation, growth and dissolution of clouds	2	2.5
b.	**VU Atmospheric Radiation** Basics of electromagnetism; introduction to the theory of radiation transmission; energy balance from local to global scale; optics with a focus on optical phenomena in the atmosphere, remote sensing applications	3	5
	Total	**5**	**7.5**
	Learning Outcomes: The students can analyse the thermodynamic state of the atmosphere and know the life cycle of clouds. The students understand the basics of electromagnetic radiation and its interactions with the earth's atmosphere. They know the physical principles that determine the Earth's radiation budget and a selection of remote sensing methods for observing the Earth's atmosphere system. They can analyse and interpret respective data sets.		
	Prerequisites: none		

8.	Compulsory Module: Statistical Data Analysis and Programming	h	ECTS-Credits
a.	**VO Statistical Data Analysis** Description of distributions, probability calculation, basics of inductive statistics, correlation analysis including multiple regression, case studies	2	3
b.	**PS Statistical Data Analysis** Discussion, advanced study and practising of the contents of the lecture	2	4.5
c.	**VU Introduction to Programming for Atmospheric Sciences** Creation of algorithms and implementation in a programming language	3	5
	Total	**7**	**12.5**

	Learning Outcomes: The students have an overview knowledge in the field of statistics and are able to analyse, discuss and solve simple statistical problems and data analyses from different subject areas using suitable statistical software. Students can read and write programmes in any of the open source programming languages used in atmospheric science. They can install a programming environment with appropriate additional packages on their computer and thus solve scientific problems. Above all, they are able to independently expand and advance their programming skills.
	Prerequisites: none

9.	Compulsory Module: Atmospheric Dynamics and Weather Forecasting 1	h	ECTS-Credits
a.	**VU Atmospheric Dynamics 1** Kinematics; conservation quantities and forces; equilibrium currents, vorticity and potential vorticity	3	5
b.	**VU Weather Analysis and Forecasting 1** Geostrophic and thermal wind; potential vorticity and cyclones and frontal systems; diagnosis, conceptual models and prediction of processes for weather events from the planetary to the frontal scale; analysis of weather (forecast) maps	3	5
	Total	**6**	**10**
	Learning Outcomes: The students know the types and causes of atmospheric currents. They understand the physical principles underlying the description of atmospheric flows and can apply them to simple equilibrium flows. They know the meaning and description of rotation processes in the atmosphere. The students understand the processes underlying the weather systems in mid-latitudes, can analyse past and current weather situations and predict future weather from the hemisphere to frontal scales using numerical and statistical weather forecast data.		
	Prerequisites: none		

10.	Compulsory Module: Atmospheric Chemistry	h	ECTS-Credits
a.	**VU Atmospheric Chemistry** Basics of chemistry the atmosphere; chemical composition of the atmosphere; greenhouse gases; ozone in the stratosphere; tropospheric ozone chemistry, air pollution	4	7.5
b.	**VU Aerosols** Primary and secondary aerosols; formation of new particles; the role of aerosols in air pollution, as condensation nuclei and in cloud physics	2	2.5
	Total	**6**	**10**
	Learning Outcomes: The students understand the meaning, role and life cycles of trace gases and aerosols in the atmosphere and their importance for the radiation budget of the atmosphere, cloud formation and air pollution. They can determine significant chemical reactions for this.		
	Prerequisites: none		

11.	Compulsory Module: Atmospheric Dynamics and Weather Forecasting 2	h	ECTS-Credits
a.	**VU Atmospheric Dynamics 2** Types of flow description; energetics of the atmosphere; disturbances and instabilities; wave representation; mesoscale and small-scale currents; predictability of the atmosphere	3	5
b.	**VU Boundary Layer Meteorology** Energy balance and states of the planetary boundary layer; turbulence and turbulent flows; basic equations; Monin-Obukhov similarity theory; role of different surface textures and flow conditions; currents in the boundary layer; measurement and parameterisation of important parameters	3	5
c.	**VU Weather Analysis and Forecasting 2** Conceptual models, diagnosis and forecasting of processes that generate weather events on the mesoscale; forecast uncertainty and ensemble forecasting; prediction for end users; determination of the prediction quality; winter precipitation; ground/high fog; convection; orographic precipitation; wind; point prediction	3	5
	Total	**9**	**15**
	Learning Outcomes: The students know which processes on different spatial scales have a dominant influence on atmospheric currents. They understand the different modelling approaches for this and can explain the examples discussed. They are able to explain the predictability of the state of the atmosphere. The students understand the processes that drive the exchange of energy, mass and momentum between the earth's surface and the atmosphere within the planetary boundary layer. They know the different states of the planetary boundary layer and the role that different surface types and flow conditions play in it. They have a basic understanding of theoretical approaches and parameterisations. They can interpret measurements of the boundary layer. Students understand the processes that drive weather systems on the meso and convection scales. They can analyse current and past weather situations in these scales with the help of data from various measurement platforms and create forecasts.		
	Prerequisites: none		

12.	Compulsory Module: Climate System	h	ECTS-Credits
a.	**VU Climate System** Similarities and differences between climatology and meteorology; components of the climate system and their time scales; energy balance; simple models of the greenhouse effect; general circulation of the atmosphere and seas; atmospheric water cycle; statistics of the climate system; main modes of climate variability (ENSO, NAO); radiative forcing and climate feedback; introduction to climate prediction models	3	5
b.	**VU Cryosphere and Climate** Components of the cryosphere; glacier species and their behaviour; influence of climate on glaciers; energy balance over snow/ice-covered surfaces; numerical models of glacier changes; feedback of the cryosphere to the oceans and atmosphere	2	2.5

c.	**VU Climate Change** Climate change on geological time scales; carbon cycle; climate changes in the Quaternary; anthropogenic climate change from the early beginnings of agriculture to the industrial age; climate change in measurement records; tipping points of the climate system; climate change projections	2	2.5
	Total	**7**	**10**
	Learning Outcomes: The students know the components of the climate system as well as their interactions and time scales. They understand the energy balance and the circulation of the atmosphere and the oceans and their variability. They can apply simple greenhouse models. The students understand the drivers and scales of climate change. They can evaluate proxy and measurement data to determine the changes and understand the structure, application and limits of climate models and the procedure for creating climate projections. Students know the properties and relative importance of the various components of the cryosphere and understand how they interact with the climate system. The students receive an introduction to simple glacier models and can analyse the simulated glacier behaviour. They can evaluate the importance of the cryospheric feedback on the oceans and the atmosphere.		
	Prerequisites: none		

13.	**Compulsory Module: Applied Methods**	**h**	**ECTS-Credits**
a.	**VU Scientific Methods** Standards of good scientific practice; types of scientific literature; search, manage and cite scientific literature; structure of a scientific paper; processes and framework conditions for creating a bachelor thesis; basics of good scientific writing methods, the creation of tables and figures and the preparation and presentation of a scientific lecture	2	3.5
b.	**PR Atmospheric Observation Methods and Devices** Physical basics; measurement principles; technical structure and application of measuring systems for the determination of temperature, humidity, wind, precipitation, sunshine/clouds and radiation components; review and quality control of measurement data	4	7.5
c.	**PR Weather Briefing** Analysis and forecast of the current weather and forecast uncertainty; presentation, verification and discussion of the forecast; use of various numerical weather forecast models and measurement platforms	1	1.5
	Total	**7**	**12.5**
	Learning Outcomes: The students are familiar with the standards of good scientific practice, understand the structure and creation process of a scientific paper, know the principles of a good scientific writing style and can create and give scientific presentations. The students identify and understand the connection between selected meteorological measurement methods and the underlying physical concepts. They can acquire further knowledge about observation and measurement methods in atmospheric sciences from specialist literature. They can calibrate sensors, program a measuring system and use it to carry out measurements, evaluate their quality and document and discuss the measuring experiment. The students can analyse the development of the current weather situation and independently create forecasts for the weather for the next few days.		
	Prerequisites: none		

14.	Compulsory Module: Individual Choice of Specialisation	h	ECTS-Credits
	For Individual Choice of Specialisation, courses from other Bachelor's programmes in the fields of geo and atmospheric sciences, computer sciences, data science and statistics, mathematics, nature and engineering sciences, theory of science and philosophy of science as well as economy offered at the University of Innsbruck may be selected. In addition, courses from the field of gender research may be taken. Providing the availability of places, a minor (30 ECTS-Credits) for Bachelor's programmes as published in the University of Innsbruck Bulletin or individual courses of the minors may be passed.		30
	Total		**30**
	Learning Outcomes: The students have knowledge and skills outside of the core areas of atmospheric sciences, with which they can solve complex and unpredictable problems in an interdisciplinary manner. They understand the challenges posed by climate change and resource scarcity and can apply, analyse and evaluate possible solutions. They have the skills to solve complex tasks in teams in a multilingual and cultural environment.		
	Prerequisites: none		

15.	Compulsory Module: Seminar with Bachelor's Thesis	h	ECTS-Credits
	SE Seminar with Bachelor's Thesis	1	2.5+ 12.5
	Total	**-**	**15**
	Learning Outcomes: The students can independently write a written paper on a specific issue from the field of atmospheric sciences that meets the requirements of good scientific practice. They apply suitable research methods and research and synthesise the relevant literature on this topic. They can present motivation, goals, methods and results of the written work in a lecture in a clear fashion for a specialist audience and answer critical questions about it.		
	Prerequisites: compulsory module 8		

(2) Elective modules covering altogether 10 ECTS-Credits may be passed.

1.	Elective Module: Advanced Study of Atmospheric Sciences	h	ECTS-Credits
	Advanced courses from all areas of atmospheric sciences in coordination with current research developments and socially relevant topics. The allocation is made in the current course catalogue.	-	10
	Total	**-**	**10**
	Learning Outcomes: The students have advanced skills in advanced areas of atmospheric sciences and can analyse and evaluate measurement and simulation data sets from these areas and apply theoretical and conceptual knowledge to solve complex problems in these areas.		
	Prerequisites: none		

2.	Elective Module: Internship	h	ECTS-Credits
	Internship Implementation and solution of specific tasks in relevant companies, public institutions, etc. amounting to at least 240 hours. Before starting the internship, approval must be obtained from the Dean of Studies. A certificate from the institution in which the internship was completed must be submitted as well as a report about the duration, scope and content of the work performed.	-	10
	Total	**-**	**10**
	Learning Outcomes: The students can apply the procedural and factual knowledge they have learned so far in a new environment, familiarise themselves with a new working environment, communicate competently, analyse new data and extract relevant information from it, and discuss, critically question, revise and present in a written report the results of the work .		
	Prerequisites: none		

§ 7 Bachelor's Thesis

(1) A Bachelor's Thesis covering 12.5 ECTS-Credits is to be written. The Bachelor's Thesis corresponding to 12.5 ECTS-Credits is to be written and presented within the scope of Compulsory Module 15.

(2) The Bachelor's Thesis must deal with a specific issue from the field of atmospheric sciences, be written independently and meet the requirements of good scientific practice.

§ 8 Examination regulations

(1) The performance of the courses from the modules is assessed by course examinations. Course examinations are:

1. examinations which assess the knowledge and skills acquired in an individual course and which comprise a single examination held at the end of the course. The method of testing (written and/or oral) is to be defined and announced by the instructor before the start of the course.
2. examinations for courses with continuous performance assessment, for which the evaluation is based on regular written or oral contributions of the participants. The course instructor has to define and announce the evaluation criteria before the start of the course.

(2) The performance evaluation for the courses of the Individual Choice of Specialisation acc. to §6 par. 1 no. 14 is based on the regulations of the curricula the courses are taken from.

(3) The evaluation of compulsory module 15 "Seminar with Bachelor's Thesis" is made by the supervisor based on a synopsis. Positive evaluation reads "participated with success", negative evaluation "participated without success".

(4) Elective module 4 "Internship" is evaluated by the Director of Studies after a statement of the Dean of Studies based on a report of the student, which includes not only the objectives, a work schedule and activities, but also the learning experiences of the student. Positive evaluation reads "successfully completed", negative evaluation "unsuccessfully completed".

§ 9 Academic degree

Graduates of the Bachelor's Programme in Atmospheric Sciences are awarded the academic degree of **"Bachelor of Science"**, abbreviated as "BSc".

§ 10 Transitional provisions

(1) This curriculum applies to all students being admitted to the Bachelor's Programme Atmospheric Sciences as of the winter semester of 2021/22.

(2) Degree students, who have started the Bachelor's Programme Atmospheric Sciences based on the curriculum 2010 (University of Innsbruck Bulletin from 21 June 2010, Issue 30, No. 315) before 1 October 2021, are entitled to finish this study programme within eight semesters from this time onwards.

(3) If the Bachelor's Programme Atmospheric Sciences based on the curriculum 2010 is not finished in time, the students are subject to the curriculum for the Bachelor's Programme Atmospheric Sciences, University of Innsbruck Bulletin of 28 June 2021, Issue 87, No. 893 (curriculum 2021). In addition, students are entitled to subject to the curriculum 2021 on a voluntary basis.

(4) The recognitions of examination acc. to §78 par. 1 Universities Act 2002 is regulated in the appendix of this curriculum.

§ 11 Coming into force

This curriculum comes into force as of 1 October 2021.

Appendix: Recognition regulations acc. to §78 par. 1 Universities Act 2002

Positively assessed exams taken as part of the Bachelor's Programme Atmospheric Sciences at the University of Innsbruck (curriculum published in the University of Innsbruck Bulletin of 21 June 2010, Issue 30, No. 315 in the version of the University of Innsbruck Bulletin of 2 June 2016, Issue 37, No. 441) are recognised for the Bachelor's Programme in Atmospheric Sciences at the University of Innsbruck (curriculum published in the University of Innsbruck Bulletin of 28 June 2021, Issue 87, No. 893) acc. to $78 par .1 Universities Act 2002 as follows:

Positively evaluated exams acc. to the curriculum published in the University of Innsbruck Bulletin of 21 June 2010, Issue 30, No. 315 with all subsequent changes				**Recognised as equal exams acc. to the curriculum** published in the University of Innsbruck Bulletin of 28 June, Issue 87, No. 893			
Par.	h	ECTS	Course	Par.	h	ECT S	Course
§ 5 1a	3	4.5	VO Introduction to Mathematics 1	§ 6 2a	3	4.5	VO Linear Algebra
§ 5 1b	2	2.5	PS Introduction to Mathematics 1	§ 6 2b	2	2.5	PS Linear Algebra
§ 5 1c	1	0.5	PR Introduction to Mathematics 1	§ 6 2c	1	0.5	PR Linear Algebra
§ 5 2a	3	4.5	VO Introduction to Mathematics 2	§ 6 3a	3	4.5	VO Analysis 1
§ 5 2b	2	2.5	PS Introduction to Mathematics 2	§ 6 3b	2	2.5	PS Analysis 1
§ 5 2c	1	0.5	PR Introduction to Mathematics 2	§ 6 3c	1	0.5	PR Analysis 1
§ 5 3a	4	6	VO Physics 1: Mechanics and Thermodynamics	§ 6 4a	4	6	VO Mechanics and Thermodynamics
§ 5 3b	1	1.5	UE Physics 1: Mechanics and Thermodynamics for Atmospheric Sciences	§ 6 4b	2	4	PS Mechanics and Thermodynamics
§ 5 4a	2	4	VO Introduction to Meteorology	§ 6 1a	2	2.5	VO Introduction to Atmospheric Sciences
§ 5 4b	2	3.5	VO Introduction to Climatology	§ 6 EM 1	2	3.5	Elective Module: Advanced Atmospheric Sciences
§ 5 5a	4	5.5	VO Analysis 2	§ 6 5a	4	6	VO Analysis 2
§ 5 5b	2	2	PS Analysis 2	§ 6 5b	2	4	PS Analysis 2
§ 5 6a	4	6.5	VO Introduction to Physics 2	§ 6 14	4	6.5	Compulsory Module: Individual Choice of Specialisation
§ 5 6b	1	1	UE Introduction to Physics 2	§ 6 14	1	1	Compulsory Module: Individual Choice of Specialisation
§ 5 7a	2	3.5	VO General and Inorganic Chemistry	§ 6 14	2	3.5	Compulsory Module: Individual Choice of Specialisation
§ 5 7b	1	1.5	UE General and Inorganic Chemistry	§ 6 14	1	1.5	Compulsory Module: Individual Choice of Specialisation
§ 5 7c	2	2.5	VO Geophysics	§ 6 14	2	2.5	Compulsory Module: Individual Choice of Specialisation

§ 5 8a *and* § 5 8b	2+ 2	4 + 3.5	VO Instrumentation *and* 2 SL Meteorological Measurements Laboratory	§ 6 13b	4	7.5	PR Atmospheric Observation Methods and Devices
§ 5 9a *and* § 5 9b	2+ 1	3.5+ 1	VO General Meteorology: Radiation *and* 1 UE General Meteorology: Radiation	§ 6 7b	3	5	VU Atmospheric Radiation
§ 5 9c	2	3	VO Micrometeorology	§ 6 11b	3	5	VU Boundary Layer Meteorology
§ 5 10a	3	6	VO Theoretical Meteorology: Thermodynamics	§ 6 7a	2	2.5	VU Atmospheric Thermodynamics and Cloud Processes
§ 5 10b	1	1.5	UE Theoretical Meteorology: Thermodynamics	§ 6 EM 1	1	1.5	Elective Module: Advanced Atmospheric Sciences
§ 5 11a	3	5.5	VU Weather Analysis and Forecasting 1	§ 6 9b	3	5	VU Weather Analysis and Forecasting 1
§ 5 11b	1	2	PS Scientific Working	§ 6 13a	2	3.5	VU Scientific Methods
§ 5 12a	2	4	VU Probability Theory and Statistics	§ 6 8b	2	4.5	PS Statistical Data Analysis
§ 5 12b	3	3.5	Programming	§ 6 8c	3	5	VU Introduction to Programming for Atmospheric Sciences
§ 5 13a	3	4.5	VO Mathematical Methods of Physics 1	§ 6 6a	3	4.5	VO Mathematical Methods in Physics 1
§ 5 13b	2	3	UE Mathematical Methods of Physics 1	§ 6 6b	2	3	PS Mathematical Methods in Physics 1
§ 5 14a	3	6	VO Theoretical Meteorology: Dynamic	§ 6 9a	3	5	VU Atmospheric Dynamics 1
§ 5 14b	1	1.5	UE Theoretical Meteorology: Dynamic	§ 6 EM 1	1	1.5	Elective Module: Advanced Atmospheric Sciences
§ 5 15a	2	4	VO Tirol, Alps, Europe	§ 6 14	2	4	Compulsory Module: Individual Choice of Specialisation
§ 5 15b	2	3.5	EU Field Course	§ 6 14	2	3.5	Compulsory Module: Individual Choice of Specialisation
§ 5 16	4	7.5	VU Introduction to Geographical Information Systems GIS	§ 6 14	4	7.5	Compulsory Module: Individual Choice of Specialisation
§ 5 17a	2	4	VO Basic Principles of Remote Sensing	§ 6 EM 1 *or* § 6 14	2	4	Elective Module: Advanced Atmospheric Sciences *or* Compulsory Module: Individual Choice of Specialisation

§ 5 17b	1	1.5	UE Basic Principles of Remote Sensing	§ 6 EM 1 *or* § 6 14	1	1,5	Elective Module: Advanced Atmospheric Sciences *or* Compulsory Module: Individual Choice of Specialisation
§ 5 17c	1	2	VO Radar in Meteorology	§ 6 EM 1 *or* § 6 14	1	2	Elective Module: Advanced Atmospheric Sciences *or* Compulsory Module: Individual Choice of Specialisation
§ 5 18a	3	5.5	VU Weather Analysis and Forecasting 2	§ 6 11c	3	5	VU Weather Analysis and Forecasting 2
§ 5 18b	1	2	PR Weather Briefing 1	§ 6 13c	1	1.5	PR Weather Briefing
§ 5 19a	2	4	VO System Earth 1	§ 6 14	2	4	Compulsory Module: Individual Choice of Specialisation
§ 5 19b	2	3.5	VO System Earth 2	§ 6 14	2	3.5	Compulsory Module: Individual Choice of Specialisation
§ 5 20a	3	6	VO Atmospheric Gases and Aerosols	§ 6 10b	2	2.5	VU Aerosols
§ 5 20b	1	1.5	UE Atmospheric Gases and Aerosols	§ 6 EM 1	1	1.5	Elective Module: Advanced Atmospheric Sciences
§ 5 21a	2	3.5	VO The Climate System	§ 6 12a	3	5	VU Climate System
§ 5 21b	2	3	VO Glaciology and Hydrology	§ 6 12b	2	2.5	VU Cryosphere and Climate
§ 5 21c	1	1	UE Climate System, Glaciology and Hydrology	§ 6 EM 1	1	1	Elective Module: Advanced Atmospheric Sciences
§ 5 22	1	2.5+ 12.5	SE Bachelor Thesis Seminar	§ 6 15	1	2.5+ 12.5	SE Seminar with Bachelor's Thesis
§ 5 E M 1a	2	4	VO Gender research	§ 6 14	2	4	Compulsory Module: Individual Choice of Specialisation
§ 5 EM 1b	2	3.5	VO Social Skills	§ 6 14	2	3.5	Compulsory Module: Individual Choice of Specialisation
§ 5 EM 2			Interdisciplinary Skills	§ 6 14	identi cal	identical	Compulsory Module: Individual Choice of Specialisation
§ 5 EM 3		7,5	Internship	§ 6 EM 2		10	Internship